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Book review:
Huff, Toby E. *The Rise of Early Modern Science: Islam, China, and the West.* Cambridge, 1993.

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The Rise of Early Modern Science: Islam, China, and the West

Toby E. Huff

Cambridge: Cambridge University Press, 1993, 409 pages. $54.95 cloth (ISBN 0-521-43496-3), $18.95 paperback (ISBN 0-521-49833-3).

Review by
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Huff's intriguing study in historical and comparative sociology aims to answer the long-debated question why a scientific revolution occurred in early modern Europe in the thirteenth century, despite the fact that the early Islamic and Chinese civilizations were technologically far superior. The Muslim astronomers al-Tusi and Ibn-Shatir, for example, had dismissed Ptolemaic astronomy in favor of a mathematical model that anticipated that of Copernicus (though the Islamic model was not heliocentric). Similar were the Islamic advances in the area of optics, which far exceeded those of the West before 1300. China, too, was more technologically advanced than the West, especially in mathematics, but like Islamic science, it failed to progress in any significant way after the fourteenth century.

Expanding on the works of Max Weber, Thomas Kuhn, Joseph Needham, Robert Merton, and his own mentor Benjamin Nelson, Toby Huff approaches the question of why the West, and not the East, gave birth to the scientific revolution, by establishing the legal, social, philosophical, and theological contexts of the respective cultures. Of keen interest to Huff is how the underlying cultural values and dynamics of each society served to inhibit or catalyze scientific advancement. Huff remarks:

> So I would argue that insofar as we can speak of a specific institution of science, its normative operatives are derived from a far more general cultural ambience and, above all, rely upon religious and legal presuppositions that long antedate the rise of modern science in the seventeenth century (p. 25).

Key to Huff's analysis is the role of medieval beliefs in contributing to the transformation of European legal institutions in the twelfth and thirteenth centuries. Here, Huff credits the emergence of autonomous corporations with giving rise to autonomous rational inquiry. The corporation which Huff singles out as being most important to these advances is the university. To Huff, it is the university alone which encouraged a search for universal truths and which set the stage for transformation. Consequently, the corporate format of European universities with its corporate certification of knowledge ultimately served to promote a universalistic worldview of rational truths that transcended the individual. Huff asserts:

> Whereas the Western legal systems had adopted reason and conscience as well as the idea of natural law as the ultimate standards for accepting or rejecting a specific legal practice or principle, Islamic law opted for tradition and the scholarly consensus (p. 133).

For this reason, Greek philosophy and scientific works were embraced and incorporated into the university curriculum.

> Indeed, some would say that it was the Greek heritage of intellectual thought; above all its commitment to rational dialogue and decision making through logic and argument, that set the course for intellectual development in the West ever after (p. 13).

By contrast, Huff argues that the Islamic civilization suffered from an inability to reconcile rational inquiry with its theology. Its emphasis on the *shari'a* "sacred law," "established once and for all the patterns of conduct and proper management of human affairs for all Muslims" (p. 67). Greek science and philosophy were tolerated only insofar as they served to underscore the Qur'anic conception of human affairs and nature. Autonomous legal, philosophical, and theological thinking were frowned upon. As Huff puts it: "Innovation, in matters of religion, was equivalent to heresy" (p. 117). Consequently, the legal and educational institutions that sprouted in the early West did not appear in the Islamic East. Moreover, the educational focus of the *madrasas* was on Islamic law and logic; the sciences remained in the

hands of private instructors. Thus, there was no corporate certification of knowledge, only the certification of individual instructors.

Though Huff admits that China was more advanced than the West in mathematics, he also makes strides to separate "science" from "technology" (and indeed these enterprises were distinguished until the twentieth century) and to characterize Chinese mathematical advancement as a progress in technology. This enables him to maintain his argument that the Chinese civilization did not advance scientifically.

The factors responsible for the decline in Chinese scientific advancement, according to Huff, were somewhat different than those in the Islamic world.

> While the Chinese acknowledged a type of positive law enacted by men, their greater commitment is to *li*, to the sacred rites of the past, and this commitment is rooted in powerful interlocking assumptions (p. 263).

Moreover, while the Chinese administration exerted some effort to inhibit original and autonomous rational inquiry, Chinese scientific advancement was hindered equally by the lack of an Euclidian system of proofs as well as accompanying advances in astronomy. According to Huff, the Chinese civilization also suffered from an inaccessibility to Greek science and philosophy and from an intellectual disposition toward modes of thinking that preferred exploring the relationships between paired opposites to the determining of causes.

> Instead of moving toward mechanical and causal modes of thinking that recognized impersonal natural forces, the Chinese thrust has ever been toward creating a harmonious worldview that linked all forces and elements together in a man-centered cosmic harmony (p. 299).

Additionally, and somewhat as a consequence, the Chinese government placed its emphasis on the maintenance of an orderly and effective administration.

> At the same time, Chinese thought stressed the importance of preserving exemplary traditions that reflected the harmonious realization of the tao through collective responsibility. While all people are called upon to live exemplary lives, the emperor and his officials have the primary duty to rightly order their conduct (and state affairs) to facilitate the correct ordering of the social world in harmony with nature (p. 271).

Thus, Huff concludes:

> The problem with Chinese science, was not fundamentally that it was technologically flawed, but that Chinese authorities neither created nor tolerated independent institutions of higher learning within which disinterested scholars could pursue their insights" (p. 318).

Therefore, unlike the West which tolerated independent rational inquiry, the world of early Islamic and Chinese scientific inquiry was inherently poised for decline.

Though in the main this work contributes to our understanding of how powerful social, intellectual, and theological dynamics can determine the ethos and scientific advancement of a civilization, it also warrants some critical comment. Foremost, is the looming question posed by Huff's thesis; that is, if we accept Huff's plentiful and persuasive answer for why Islamic and Chinese science stagnated after the thirteenth century, we also must ask how the Islamic and Chinese civilizations ascended to technological and scientific superiority prior to 1300. If the Islamic and Chinese civilizations were legally, intellectually, and theologically disposed to non-advancement, how did they advance in the first place?

Huff's evolutionary approach toward scientific advancement is equally problematic. His treatment of Western scientific advancement, for example, is based on the notion that the history of science is somehow a linear and static progression. Certainly, this is too simplistic a paradigm, one that betrays the "powerful interlocking assumptions" (p. 263) of Huff's own time, and one that overlooks periodic historical moments of scientific regression, such as the Humanists' rejection of scholastic curriculum in favor of the texts of classical antiquity. Moreover, the so-called "scientific revolution" of the 1600s appeared in its day, not as an evolutionary stage in an always progressive chain of events, but as a knee-jerk reaction to a long period of stiflement and decline.

Yet, Huff's approach to Islamic and Chinese scientific advancement takes an opposite stance and suggests that we see Islamic and Chinese institutions and theologies as fixities. For example, Huff argues that the *madrasas* could not evolve into corporations because they were legally bound to the intentions of their founders. However,

this is not the case historically, for the intentions of the Islamic institutional founders could be, and often were, superseded by the needs of an institution's contemporaries (as a perusal through studies on early *fatwas* demonstrates). Similarly, Huff's discussion of Chinese thought at times appears tendentiously selective. For instance, the work pays no attention to the frequent and informative struggles between factions, such as that between the Buddhists and Confucians. Such a monolithic treatment of the Islamic and Chinese belief systems obscures the often significant, multifaceted intellectual undercurrents that bear fundamentally upon his thesis.

Consequently, though unintentional, one senses in Huff's frequent generalizations latent notions of cultural superiority. Similarly, and this goes back to Huff's treatment of scientific advancement as linearally progressive, the question which this work attempts to answer is premised on overt scientific optimism and on the assumption that cultural advancement can be guaged or measured by a civilization's scientific output. In this reviewer's opinion, this remains to be demonstrated.

Nevertheless, one cannot help but be impressed with Huff's breadth and command of the primary and secondary literature. Always well-argued and documented in detail, this book demonstrates the usefulness of a holistic perpsective for explaining the dynamics of cultural and scientific change. I recommend this work for advanced university students interested in engaging the difficult questions that face the sociologist of science.

Price of Honor: Muslim Women Lift the Veil of Silence on the Islamic World

Jan Goodwin

New York: Plume, 1995. 363 pages. $12.95
(ISBN 0-452-27430-3).

Review by
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I met Jan Goodwin in Amman in 1992 in the apartment of Toujan al-Faisal, whom she had been interviewing. I was returning a folder of Arabic-language newspaper clippings and other materials I had borrowed for my own article on Faisal. The three of us proceeded to have a very pleasant chat. The resulting articles, Goodwin's chapter 11, "Jordan: When Islam is the Solution," in *Price of Honor* and my chapter 12, "Women's Human Rights on Trial in Jordan: The Triumph of Toujan al-Faisal," in *Faith and Freedom: Women's Human Rights in the Muslim World*, ed. Mahnaz Afkhami (Syracuse: Syracuse University Press, 1995), demonstrate the difference between the worlds of journalism and of academia.

Goodwin's account begins "Kill the apostate!" (p. 263). Mine begins "Twelve women were among the 650 candidates who stood for election to parliament. . ." (p. 214). Goodwin's account is very lively but short on background research; mine is full of context but takes effort to read through. Her account was rushed to press and does not include the fact that in late 1993 Faisal became the first woman elected to parliament. I was more than happy to withdraw the article from publication in order to include the later election. Academics do not have to worry too much about deadlines.